

WHAT IS CLAIMED IS:

1. A disposable cartridge that operates in conjunction with a point-of-care analytical device, said cartridge comprising:
a network of conduits and reservoirs within said cartridge;
at least one micro pump fluidly coupled to said network for transporting small volumes of biological fluid, said pump comprising:
a rotatable portion having a magnetic core and configured to be rotatable by alternating inductive magnetic fields to urge fluid through said network.
2. The disposable cartridge of claim 1 wherein said rotatable portion comprises a microscopic paddle wheel.
3. The disposable cartridge of claim 1 wherein said rotatable portion has a hydrophobic surface.
4. The disposable cartridge of claim 1 wherein said alternating inductive magnetic fields provide a torsion force to the rotatable portion that does not exceed the level that would lyse or puncture blood cells.
5. The disposable cartridge of claim 1 wherein a plurality of micro pumps are placed within the network of the cartridge.
6. A point-of-care analytical device, said device comprising:
a disposable cartridge;
a network of conduits and reservoirs within said cartridge;
a micro pump fluidly coupled to said network for transporting small volumes of biological fluid, said pump comprising a rotatable portion configured to be rotatable by alternating inductive magnetic fields to urge fluid through said network;
an external electromagnet providing said alternating inductive magnetic fields for causing the rotatable portion to move to transport small volumes, said

electromagnet positioned external of said disposable cartridge and fluidically isolated from said micro pump.

7. The point-of-care device of claim 6 wherein the electromagnet is reused with successive disposable cartridges and the rotatable portion is contained in the cartridge and does not contaminate the electromagnet.

8. The point-of-care device of claim 6 wherein said rotatable portion comprises a microscopic paddle wheel coupled inductively to said external electromagnet.

9. The point-of-care device of claim 6 comprises a system where the actual pumping mechanism of the micro pump is completely isolated from said external electromagnet.

10. The point-of-care device of claim 6 comprises a system where the paddle wheel to actuate the motion may be separated by either plastic or silicon and still maintain an inductive coupling with the paddle wheel such that the magnetic core spins by rotating the magnetic field.

11. The point-of-care device of claim 8 wherein the electromagnet comprises a micro-coil which causes the paddle wheel to move according to the alternating field in the micro-coil.

12. The point-of-care device of claim 8 wherein the paddle wheel in micro-pump conduits that contain paddle wheel chambers to house the paddle wheels recessed in the conduits to facilitate cartridge assembly.

13. The point-of-care device of claim 8 where the paddle wheels act as valves in the network to isolate the biological fluid prior and after pumping to control reaction time and isolate analytical reactions.

14. The point-of-care of claim 6 wherein said alternating inductive magnetic fields provide a torsion force to the rotatable portion that does not exceed the level that would lyse or puncture blood cells.